DOCUMENT RESUME

ED 146 576 CS 003 788

AUTHOR Steurer, Stephen J.
TITLE An Accurate Method to Screen Vocational Shop Candidates. Preliminary Study.
PUB DATE Oct 77
NOTE 14p.; Paper presented at the Annual Meeting of the College Reading Association (21st, Cincinnati, Ohio, October 26-29, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Correctional Education; *Informal Reading Inventory; Mathematics; *Predictive Ability (Testing); Predictive Measurement; *Reading Ability; *Reading Research; Remedial Programs; *Screening Tests; Test Construction; *Vocational Education; Vocational Training Centers

ABSTRACT

In a pilot study conducted at a correctional training center, it was determined that a score of 70% or better on an informal reading inventory, based on the textbook used in a vocational shop program, was an accurate predictor of an applicant's success in the program. On the basis of the pilot study, inventories were administered to applicants for numerous shop programs; a score of 70% or better entitled an applicant to enter a shop program. Applicants who scored below 70% attended daily reading and math classes to prepare for entrance. Preliminary results indicated that most shops had a perfect correlation between test achievement and academic success in the shop. Mathematics computation tests were also administered to program applicants, but no extensive study was performed to determine the relationship of these scores to vocational shop success. (The paper includes directions for constructing and scoring informal reading inventories and provides a sample test.) (GW)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED146576

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

An Accurate Method to Screen Vocational Shop Candidates

Preliminary Study

Stephen J. Steurer

Most vocational teachers can list many of the kinds of math and reading skills that a student must have before entering their shops. Yet when asked what kind of test should be used to determine the student's entry skill level, many teachers mention standardized grade level equivalence scores. Academic grade level and the specific skills in reading and math are not the same. Because many students enter vocational shops on the basis of grade scores, many cannot do the vocational math and reading required.

This was a problem in the vocational shop program at Maryland Correctional Training Center in Hagerstown where there were more than a dozen vocational shop programs. A standardized academic achievement test was being used for screening students. An arbitrary grade level (usually 6.0) had been established for vocational shop entrance. The teachers were having difficulty with many students in reading and math areas.

Often, the teachers could not teach vocational skills because many students could not even read the textbook and related materials.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Stephen J. Steurer

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

CS003788

Partial Solution: Shop Related Reading and Math

An important advance was made when shop-related reading and math was introduced. Students already in the vocational programs would attend a class for an hour or two per week to learn reading and math skills in the materials that they were currently using in their shop programs. Careful cooperation between the shop teachers and Reading/Math teacher made this program very successful. Yet much of this work centered on working with students who were very far behind and could not keep up with the rest of the class because of their lack of skills in reading and math. In other words, with the grade level scores being used for entrance, many students were being placed in vocational shops who were not ready in math and reading skills and related reading and math instruction was not enough to bridge the gap.

Pilot Study: I on Students in Auto-Shop

Because the shop-related Reading program was going well, the vocational supervisor and staff were willing to conduct an informal reading inventory study. A pilot study was initiated in which students entering the auto mechanics shop program via the standardized screening test were also tested in reading skills with an informal reading inventory (IRI). The IRI consisted of 10 questions based on the first chapter of the auto mechanics textbook. Students would read the questions, find the

answers in the text and write the answers in their own words. The questions consisted of two factual questions, two or three vocabulary definitions, five or six comprehension beyond the factual (see attached test construction directions.) If the students could not write, they could dictate their answers. The papers were scored and set aside so that neither teacher (vocational shop or shop-related Reading/Math teacher) knew the scores. After these 11 men were in shop for eight weeks, the reading consultant conducting the study asked both teachers how well these men were doing academically. Were they able to read well enough to do the work? In the opinion of the vocational teacher, nine of the men were doing satisfactory or better work. All of these men had gotten at least 65% or better on the IRI. The two men who the teachers said were doing unsatisfactorily had received very low scores on the IRI (33% and 40%).

The shop-related Reading/Math teacher was then asked to rate these 11 men in the same manner. He chose seven of the 11 men as doing satisfactory work in his class. These seven were all included in the group of nine men the shop teacher had chosen. None of them received less than 68% on the IRI. The highest score of the four men who were not doing satisfactorily was 68% (see Table 1.)

The data in Table 1 indicates that there was a high degree of correspondence between the vocational and related subjects teacher testimony

TABLE 1

Informal Reading Inventory Results for Auto Mechanics Shop

Student	IRI Test	Vocational Teacher	Shop Related Reading/Math Teacher
1	95	+	+
2	90	+	+
3	80	+	+
4	70	+	+
5	70	+	+
6	70	+	+
7	68	+	+
8	68	+	-
9	65	+	-
10	40	-	-
11	33	-	-

\+ student doing well academically
\- student doing poor academically

about the men academically. The disputed cases involved men who scored 65% and 68% on the IRI, normally borderline scores between frustration and instructional levels. (Frustration means a level where the student cannot handle reading. Instructional means that the student can understand most of the material but could understand more with teacher help.) The results also indicated that the test might be a good predictor of success in auto mechanics, that a score of 70% or better might be used to show the likelihood of a student's success in reading the textbook materials. (Remember that both teachers agreed on the students who scored 70% or better with 100% correlation. It was only the two students who scored 65% and 68% about whom the teachers disagreed.)

Better Solution: IRI For All Shops

The Superintendent of Treatment and the vocational shop supervisor gave permission to construct IRI's for all shops after seeing the above pilot results. In August, 1976, the teacher in charge of academic and vocational testing started giving and scoring IRI's instead of standardized tests. Records were kept on all of these men and follow-up testimony was obtained from all of the teachers involved. Men were directly admitted to the vocational shop or its waiting list if they scored 70% or better on the IRI. For those men who did not qualify but still wanted a vocational

program, the option of Shop-Prep was created. These men went to reading and math classes daily for several weeks until they were able to reach a satisfactory level of competency in the materials of the shop that they wanted to enter. When the Shop-Prep teachers felt they were ready, they were put on the waiting list or directly entered into the shop.

The vocational shop programs involved were, Drafting, Masonry, Painting, Carpentry, Machine Shop, Plumbing, Barbering, Auto Mechanics and Auto Body Repair. IRI's were constructed for other programs including Welding, Shipfiting, Sheet Metal and Upholstery but not included in this study.

Preliminary Results

While several hundred IRI's have been given since August, 1976 only 65 men have entered the programs to date (April, 1977) and have been in them long enough for the teachers to feel that they could give an accurate testimony on their academic abilities. The findings are rather dramatic as indicated in Table 2. (see attached)

Fifty-nine out of 65 of the men were doing satisfactory work in the shops to which they had been assigned. Three were marginal and the teacher was not sure whether the student would succeed by the end of the course. Only three were doing unsatisfactory work. The important fact

TABLE 2

Results of IRI Tests

	# of IRI-Tested Students Admitted	# of Students Doing Satisfactory Work	# of Students Doing Marginal Work	# of Students Doing Unsatisfactory Work
Auto Body Repair	2	1	0	1
Auto Mechanics	5	5	0	0
Carpentry	10	10	0	0
Drafting	13	10	3	0
Machine	6	4	0	2
Masonry	12	12	0	0
Painting	7	7	0	0
Plumbing	10	10	0	0
TOTALS	65	59	3	3

was that most of the shops have 100% correlation between the 70% or better score and their academic success in the shop. These include Auto Mechanics, Carpentry, Masonry, Painting, and Plumbing shops.

What was just as important were some of the comments that the teachers themselves made. Some stated that they had never had a better crop of students. They could see the difference already, although the students tested with IRI's were still in the minority. The classes and waiting lists still contained many students tested with standardized achievement tests. It will be interesting to see if the IRI prediction percentages remain after all students in the vocational shops have been tested via IRI's.

Positive Interference: Competency-Based Math Test

At the same time that the IRI's were instituted in August all the shop teachers were interviewed about the math skills needed to succeed in their shop. The result was written down for each shop. In addition to the IRI, the men received a math computation test in addition, subtraction, multiplication and division from whole numbers through decimals and fractions. The scores were examined for the skills of the vocational shop that they desired to enter. They were put on the waiting lists for into Shop-Prep classes on the basis of the composite results of the IRI and math test scores. No extensive study to date has been performed to see how these scores

relate to vocational shop success. They are the same men who did 70% or better on the IRI; therefore, they have both reading and math skills needed for each shop. Probably, the combination of math and reading scores are better predictors than only one of the scores.

How to Make IRI Tests

The construction is simple and explained step-by-step at the end of the article. A sample test is also included for Auto Mechanics. Note how simply each question is stated. What, where, how, etc., are used instead of some of the more difficult terms such as explain, compare and contrast, summarize, etc. The questions follow the order of the material in the text. There are not trick questions and no intended complications. The questions stem directly from the content of the materials.

How to Make and Score IRI Tests

Select a few pages from the first chapter of the textbook. Have two or more people construct questions, pool them and then choose the ones which are best in everyone's opinion. Assign 10 points per question for a total of 100 points. Some questions can have two or more parts, so assign five or three and one-third points per part. Some questions may have two or more answers which are correct. Be ready to accept different

versions. Do not correct student answers for grammar and spelling. IRI's are tests of comprehension, not writing. Have two or more people correct the tests and compare scores. If the questions and agreed upon answers are well done, there will be little difference in the scores assigned by the people. If there is a wide difference in scores, find out which questions are causing the difference and re-write or substitute other questions.

Conclusion

It would be premature to make any claims that these informal reading inventory data are significantly demonstrates their validity for screening vocational students. Yet, evidence is forceful that IRI's are much better than grade level scores from standardized academic tests. They directly test the skills that are needed for success in the shop. Basically, they answer the question: Can this student read adequately the biginning materials he will encounter in this shop? If students can read the first chapter with adequate understanding the teacher can more easily help them read later and more difficult chapters. If they cannot read the beginning chapter, the vocational teacher will have a more difficult instructional task.

INFORMAL READING INVENTORY

For Screening Purposes

Purpose

To get at comprehension abilities of students

Materials

Excerpts from textbooks

Take 1 representative sampling from material

Prepare Materials

Outline sampling to get at ideas and facts

Make up 10 questions, not multiple choice

- 1 - 2 factual

- 1 - 2 vocabulary (context, usage, synonyms, antonyms, etc., not definitions)

- 6 - 8 beyond factual (implications, summary, interpretations, conclusions, judgments, translations, sequence, cause and effect, applications, etc.)

- Write directions: "Read the following questions below and find the answers in the textbook on pages ___. Take your time. Go over the textbook and questions until you are sure of the answers.

Administration

Pass out textbooks or xerox copies and questions.

Relax students, go over directions with them. Tell students that results are for the teacher to use to admit them to the vocational shop area. They should do their best. If they can't write they can dictate answers to the teacher privately later.

Scoring

70% - instructional level, student can do much of work alone with success, teacher will be able to work profitably with student

-70% - frustration level, student cannot use material well enough to be admitted to shop. A shop preparation program is more appropriate.

Name _____

Date _____

INFORMAL READING INVENTORY
AUTO MECHANICS
CHAPTER ONE

Directions: Read the questions below and find the answers in the textbook. Then answer the questions below. Take your time! Go over the textbook and questions until you are sure of your answers.

1. Use your own words. What does internal-combustion type engine mean?

2. What ignites the fuel and air mixture inside the cylinder?

3. What does explosion of the fuel-air mixture in the combustion chamber cause to happen?

4. What is compression ratio?

5. In order to get more engine power what can you do to the compression ratio?

6. What are the parts of the fuel system?

7. What does the carburetor do? (Use your own words.)

8. What is the purpose of the ignition system? (Use your own words.)

9. What puts out more volts, the battery or the ignition coil?

10. What does the distributor do? (Use your own words).